U.S. HOUSE OF REPRESENTATIVES
HOUSE COMMITTEE ON SCIENCE – MINORITY STAFF
October 26, 2004

Science and Technology: The Untapped American Resource

Prepared for
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www.house.gov/science_democrats

This report details the failure of the Bush Administration and the Republican leadership in Congress to harness science and technology toward the solution of the Nation's pressing problems. "The Untapped American Resource" details ways, in eight specific policy areas, in which S&T policy has been allowed to drift in the Bush Administration, areas where Congressional oversight has been absent, and programs where funding has not been adequate to meet specific economic and social challenges. The report also documents efforts that Democrats have made, and would continue to make in positions of governance, on these matters.

Overall the Republicans in the Administration and the Congress receive a "D" for their efforts in science and technology, with grades ranging from "C-" to "F" in each of the eight individual policy areas.

1. Supporting Technological Innovation to Create Good-Paying Jobs

BUSH ADMINISTRATION GRADE: F

In 2001, while the Nation slid into a recession, spurred on by comments from both Vice President-elect Dick Cheney and Bush top economics advisor Larry Lindsey, (**http://www.cnn.com/2000/ALLPOLITICS/stories/12/04/whitehouse.cheney/index.html**) the new Administration made plans to terminate or scale back two successful Federal programs designed to promote technological innovation and create high-quality American jobs. These programs, both established during the Reagan Administration, are the Advanced Technology Program (ATP) and the Manufacturing Extension Partnership (MEP). ATP provides matching Federal funds to companies attempting to commercialize promising new technologies. MEP provides technical assistance to thousands of small businesses in all 50 States – businesses which generally can not afford to bring in expensive consultants to advise them on matters like procuring software, developing advanced training programs, or implementing an e-commerce strategy. Both of these programs are aimed at small businesses and were funded at viable levels during the Clinton Administration (over $100 million for MEP, over $200 million for ATP).

Budget Requests from the Bush Administration for FY2002-2005

Budget year	ATP	MEP
FY2002	$13 million (suspend program for study; cuts the program from $145 million)	$106.3 million
FY2003	$107.9 million	$12.9 million
FY2004	$27 million	$12.6 million
FY2005	$0	$39 million

The Bush record on ATP and MEP is one of endless flip-flopping, indecision, and mixed signals. First the ATP is suspended in order to be re-oriented, then it is re-oriented and given almost sufficient funds, then it is proposed for termination again. MEP is first fully funded, then proposed for termination and now the Administration boldly requests just one-third of what the program really needs. Meanwhile, small businesses across the country have been denied the technologies and skills necessary to compete in the increasingly competitive international marketplace.

DEMOCRATS SAY...

We can do better than this. We would restore full funding for the ATP and significantly increase funding for the MEP. American firms need to be given incentives to keep jobs in this country. American workers and families need to know that the government is doing everything it can to help our country retain its manufacturing capacity and support good, high-paying jobs. Manufacturers need to know that when the government says it is going to start a program to support their innovations and help create jobs that we will follow through on our word. Such certainty can help reduce indecision. If ever there was a time not to undercut technology innovation and job creation, it was during the Bush recession and the jobless recovery.

2. Leadership on Manufacturing at the Department of Commerce

BUSH ADMINISTRATION GRADE: F

During the past four years our manufacturing sector has lost 2.5 million jobs. This sector, especially small- and medium-sized manufacturers, is still facing significant pressure. This Administration has done almost nothing to support our manufacturing base.

After two years of recession and one year of jobless recovery - fully three years into its term - the Administration finally released a manufacturing agenda. The agenda amounted to little more than a recitation of the Republican mantra of lower taxes (already in place), lower health-care costs, liability reform, and free trade without specifying how to achieve any of these. Everyone would like lower taxes, but with small- and medium-sized manufacturers going out of business, it is unlikely they will be helped by tax cuts. On the important issue of healthcare costs, Americans now pay more for less care – hardly the direction we should be headed. This Administration has yet to set out a policy to achieve lower healthcare costs.

Bowing to political pressure to do something, the centerpiece of the Administration's manufacturing agenda was the creation of an Assistant Secretary of Manufacturing and Services at the Department of Commerce. Buried within the bureaucracy of the Department of Commerce, this new position has little authority to take a proactive stance to aid our manufacturing sector. The Administration took six months to identify its nominee: Mr. Anthony Raimondo, CEO of Behlen Manufacturing. Unfortunately, it was soon revealed that Raimondo had laid off 75 workers in 2002 in the wake of announcing a new plant opening in... China! Raimondo gracefully withdrew his name when this information came out. One month later, seven months after first announcing the creation of this medium-level position to save American manufacturers and support our workers and with approximately 70,000 manufacturing jobs lost during that period, the Administration announced its second pick for the job: Al Frink. Little has been heard from Mr. Frink other than the announcement of his appointment.

DEMOCRATS SAY...

As Democrats we believe there are a number of pro-active policies the Federal government can take now to help our manufacturing sector and keep high-paying, high-benefit jobs in the United States. We advocate:

- Creating and funding a Senate-confirmed Undersecretary of Manufacturing. This position would report directly to the Secretary of Commerce and would be supported by an Office of Manufacturing Policy.

It would be responsible for coordinating all federal efforts related to manufacturing.

- Establishing a President's Manufacturing Council to develop a National Manufacturing Agenda.

- Enhancing education of the manufacturing workforce by increasing funding for the National Science Foundation's Advanced Technological Education (ATE) program. This program is under-funded and over-subscribed by community colleges. We need to provide it with adequate support.

- Supporting the development of manufacturing skills standards by funding the Manufacturing Skills Standards Council.

- Fully funding the National Institute of Standards and Technology (NIST). NIST's standards-related activities support the very foundations of our manufacturing base and industrial competitiveness. Under the Bush Administration, NIST's budget has declined in real terms.

- Getting to the root-causes of the off-shoring phenomena, as well as its impact on the American workforce and economy by collecting the hard data needed to support the right policies.

Earlier this year, Science Committee Democrats pushed for all these ideas in a Manufacturing bill marked up in Committee, but the Republican opposed every one of them.

3. Being Good Stewards of the Nation's Space Program

BUSH ADMINISTRATION GRADE: C-

The nation's space program has long been a source of pride and inspiration, demonstrating American technological prowess and scientific achievement. Moreover, the application of our aerospace technologies to meet earthly needs has directly benefited our citizenry in innumerable ways[1] over the past four decades. That is the good news. The bad news is that over the last three and a half years, our space program has been weakened by inconsistent leadership, ill-advised priorities, and initiatives that lack budgetary and programmatic credibility.

Consider the International Space Station. When confronted with escalating costs in the Space Station program, the Bush Administration chose the easy path: it slashed the Space Station's research budget by 40 percent, undercutting the rationale for building the Station in the first place. It also eliminated the funding for the U.S. Crew Return Vehicle (CRV) – something the U.S. was supposed to provide under the international agreements governing the Space Station partnership. And it eliminated the habitation module and cut the originally planned crew size by more than half – further reducing the Station's usefulness for research.

A year later, the Administration reversed course and said it would build an orbital space plane (OSP) to serve as a U.S. CRV – at a cost that was estimated to be more than five times higher than the CRV program that it had cancelled a year earlier! It sent Congress a budget plan that under-funded the OSP program by some $10 *billion* over a five-year period. Then it decided that the Russians would supply the CRVs - even though existing law prohibits the purchase of such Russian vehicles by NASA! In sum, the Administration achieved a trifecta: it reduced the Station's research capability, shifted program costs into the future instead of reducing them, and engaged in grossly unrealistic budgeting.

The Space Station situation is symptomatic of the Administration's overall stewardship of NASA and the nation's space program. While the current Administrator was touted as a "bean counter" who would restore fiscal responsibility to the space agency, he has in fact presided over an agency who has now failed to achieve a passing grade on independent audits of its books for two of the last three years. More troubling, NASA's own inspector general has concluded that NASA is not likely to receive a clean audit for the next five years, and both the IG and the GAO have identified a series of problems with NASA's implementation of its financial management system.

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[1] Satellite communications, satellite television, space imagery, global positioning, weather forecasting, hurricane tracking – to name a few.

On February 1, 2003, the Space Shuttle *Columbia* was lost in a tragic accident that cost the lives of seven astronauts and grounded the entire Shuttle fleet indefinitely. The *Columbia* accident investigation board subsequently issued a report that was critical of NASA's handling of the Shuttle program over the last two decades. However, it also focused on the schedule pressure imposed on the Shuttle workforce by management and *"stressed from the very top"* (i.e., from the NASA Administrator) that helped create the environment that led to the accident. And yet, early on in the planning for returning the Shuttle to flight status, that same NASA management was making very optimistic statements about when the Shuttle would begin flying again. This is not all that surprising. An agency that was once managed by some of the most distinguished engineers and scientists in the nation is now becoming a parking place for inexperienced retired admirals and generals because of the hiring decisions of the Administrator.

In January of this year, President Bush announced his space exploration initiative - a human landing on the Moon by 2020 and eventual human missions to Mars - all within a NASA budget that would grow by no more than inflation. However, in subsequent Congressional hearings, it became clear that NASA management could not provide credible cost estimates to achieve the programmatic milestones announced by the President. It also became clear that NASA's other important R&D activities - aeronautics, Earth science, major areas of space science, space communications, and education - were all going to be progressively squeezed to make the budgetary math work. And then, just three months before the Presidential election, the NASA Administrator undertook a sweeping reorganization of both NASA Headquarters and the NASA Centers to conform to the President's exploration "vision", even though there was no Congressional consensus to support NASA's plans.

DEMOCRATS SAY…

We agree that NASA needs a clear mission to guide budget and policy decisions, but we also believe that a vision must be grounded in the budget realities of the Nation. The President's Space Exploration Initiative looks like a blank check which will either require us to add many more zeroes at the end, or we will abandon the effort with no useful results when the full scale of costs become known. NASA's unfortunate history of overoptimistic cost estimates mandates skepticism that the President's vision can be achieved with the resources he proposes to offer.

We also believe that the Initiative as proposed threatens the balance between the human space program and the robotic missions that have revolutionized our understanding of the Universe. Since the beginning of the Space Age, NASA has launched a series of missions which have rewritten astronomy and physics textbooks, showed us the hearts of galaxies, explained the workings of the Sun and even now drive us across the surface of Mars. It can be argued the astronauts were never more valuable when they were

rescuing the Solar Max satellite or installing new instruments in the *Hubble* Space Telescope. Yet in the wake of the President's announcement, NASA proposed to abandon the *Hubble* and has postponed missions to determine the origins of the Universe even though the National Academies declared these the highest science priorities of the decade. Democrats have worked too long and too hard to achieve this balanced space program to allow NASA's natural tendency to favor human space flight to the exclusion of other priorities.

In the space arena, Congress has failed in its oversight role. The Republican Majority has not asked the hard questions of NASA – on budget costs, on shuttle safety, on station safety – for fear of embarrassing the Bush Administration. We would follow Ronald Reagan's old dictum that one should "trust, but verify." We will go to Mars one day, if only because the history of humanity shows that we always want to go to new places. But the *Columbia* accident board has shown us that the hardest questions are not the technical issues. What happens inside an organization is equally critical to the success of a risky venture like human space flight. That means Congress must constantly look below the surface, and that cannot be done in a two-hour hearing on an irregular basis. We would ask tough questions, demand the underlying documents which would let us get at answers, and then push for policies that move the Nation towards a sensible human space flight effort.

4. The Lack of Scientific Integrity: Avoiding Facts, Obscuring Truth

BUSH ADMINISTRATION GRADE: D

The Bush Administration has been accused of regularly suppressing and distorting scientific analysis from Federal agencies as well as undermining the quality of scientific advisory panels by applying political litmus tests to appointments. These accusations come not from wild-eyed radicals but from leading scientists, engineers, and science policy experts. On February 18, 2004, 62 leading scientists – including 20 Nobel laureates, 19 National Medal of Science winners, leading medical experts, former federal agency directors and university chairs and professors – issued a statement calling for regulatory and legislative action to restore scientific integrity to federal policymaking. While every administration is criticized, in one case or another, of ignoring inconvenient facts or bypassing the consensus on a particular issue, the scope and scale of the accusations leveled at the Bush Administration are simply unprecedented.

The scientists' statement included the following summary of the situation:

"When scientific knowledge has been found to be in conflict with its political goals, the administration has often manipulated the process through which science enters into its decisions. This has been done by placing people who are professionally unqualified or who have clear conflicts of interest in official posts and on scientific advisory committees; by disbanding existing advisory committees; by censoring and suppressing reports by the government's own scientists; and by simply not seeking independent scientific advice... Furthermore, in advocating policies that are not scientifically sound, the administration has sometimes misrepresented scientific knowledge and misled the public about the implications of its policies... ***The distortion of scientific knowledge for partisan political ends must cease if the public is to be properly informed about issues central to its well-being, and the nation is to benefit fully from its heavy investment in scientific research and education.****"*

Playing politics with scientific advice has had ramifications on everything from decisions on environmental regulations to our assessment of the Iraqi capabilities with weapons of mass destruction. Despite these serious charges from respected leaders in the scientific community, the leadership of the Republican-controlled Congress has simply rejected the notion that anything could be wrong. The relevant Committees of jurisdiction have not held a single hearing on this issue despite stories of abuse going back to the very beginning of the Bush Administration.

DEMOCRATS SAY....

Inconvenient facts and uncomfortable truths are what we expect scientific experts to bring to policy-makers' attention. Government officials must take these facts and truths into account when shaping policy. No other course makes any sense. Public policy built on deception and wishful thinking may serve some narrow interest, but it will not serve the public nor will it be sustainable in the long-run. So the first difference on scientific advice between Democrats and the Bush Administration is that we would commit to seeking the truth before we settle on a policy. Had this Administration done so, they would not find themselves locked into an unworkable stem-cell policy which will inevitably retard scientific progress and life-saving treatments and cures for dreaded diseases.

Secondly, we believe Congress has been remiss in its oversight responsibility. The charges leveled against the Bush Administration are too serious to ignore and too credible to be dismissed with a sniff that this is just politics as usual or with a cheap shot at the motives of those who raise these charges. Science Committee Democrats have commissioned the Government Accountability Office to independently investigate abuse of scientific advisory panels. Their work led to some commitments for reform by the Bush Administration, but the Administration largely refused either to acknowledge that there is a problem with abuse of these panels or to implement most of the reforms recommended by GAO.

Science Committee Democrats have held hearings on scientific integrity, in the absence of any interest from the Republican Majority, to better understand the role of scientific advice in the policy-making process. One consequence of the Bush Administration's hostility to information that will not support its political preferences, we learned, was that an increasing number of experts are reluctant to testify to, or serve on, advisory panels. As long as the Bush Administration is in office, it will be harder to get the best advice before policy makers. As long as experts feel their advice will be ignored, suppressed or selectively used, we will see fewer and fewer willing to work with the government. The victims of this situation will be the public the government is supposed to serve.

5. Reducing Our Dependence on Foreign Oil

BUSH ADMINISTRATION GRADE: C-

The Bush Administration began its efforts to establish an energy policy by launching a secretive task force, under Vice President Cheney's direction, to which energy companies such as Enron were given privileged access. The initial Cheney report read like a wish list from big energy companies with $23 billion in tax subsidies over ten years and a raft of other incentives proposed to increase oil, gas, and nuclear production. The moral centerpiece of their proposal was the opening of the Arctic National Wildlife Refuge to drilling. Cheney was openly dismissive of conservation as a cost-effective way to reduce oil consumption rates.

The comprehensive energy plan put forward by the Administration did not pass the 107th Congress. The Democratic-controlled Senate was blamed for that failure. However, the Republican-controlled 108th Congress has similarly failed to move this bill. This failure had nothing to do with Democrats. It was a result of factions of Republicans fighting with each other over which interest groups deserved more favors.

Republicans give lip service to conservation and efficiency programs, but they have savaged these programs at DOE[2], diverting the funding to high risk investments in developing technologies for hydrogen vehicles. The level of funding in the hydrogen program may be too much of a good thing, as valuable research in areas such as alternative fuels, renewable energy, industrial efficiency, energy efficiency and conservation are being short-changed at the expense of this one, very risky technology whose pay-off may be a long time off. The National Academies of Science, the American Physical Society and the Union of Concerned Scientists have all warned that the hydrogen economy is literally decades away and this administration is missing opportunities to push technologies that can deliver cost-effective energy savings far sooner than a transportation infrastructure based on hydrogen.

DEMOCRATS SAY...

The Nation needs a change of direction in energy policy. The country will certainly remain dependent on fossil fuels for the foreseeable future, but we can do more to find alternatives even as we take prudent steps to secure supplies. It is imperative that we take aggressive steps to encourage conservation and renewable energy sources. Much of this can be accomplished without

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[2] Bush's 2002 budget cut funds for renewable energy resources by $190 million. Bush's 2003 budget reduced funding for renewable energy programs by $35.8 million. Bush's 2004 budget slashed funding to renewable energy programs by $137 million.

comprehensive legislation simply by requesting and fighting for funding adequate to do the job.

Democrats would not tolerate a process whereby government policy, developed with extensive outside advice, remained secret. Whether the administration is Democratic or Republican, Congressional Democrats would seek the records of meetings between the parties involved in crafting future energy policies. One reason that the Cheney Task Force's records remain largely secret is that not a single Republican-controlled Committee in the House or Senate has officially sought those records. The Majority seem satisfied to let public policy be shaped behind the scenes by those with the most profit to be made by that policy.

A key goal of Democrats on the Committee is increasing utilization of renewable energy to 20 percent by 2020. This is a realistic and attainable goal, but the federal government must begin right now to implement the necessary research and development programs.

We also believe it isn't enough to keep investing in new technologies. We also need to take steps to make sure that taxpayer-funded innovations find their way to market where people can begin to use them. Republicans have a naive faith that somehow the market will provide, and that buyers and sellers will magically find each other. Experience has proven that this is a risky strategy. Democrats would be more aggressive in establishing a program, patterned on the technology outreach efforts at the Commerce and Agriculture Departments, to make sure our best innovations make it to the people who need them.

6. Securing Cyberspace

BUSH ADMINISTRATION GRADE: D

The consequences of disruptions to the nation's electronic information networks and damage or corruption of the information residing in these networks could be severe. Cyber attacks result in economic costs, but could also result in physical harm, since critical systems such as electric power grids, water supply systems, and air traffic routing are controlled by electronic networks.

The Administration has not made the security of cyberspace a high priority. The Administration's Strategy to Secure Cyberspace was released two years ago, after being watered down to little more than a cheerleading effort to encourage the private sector to take action, and has not been implemented. The cyber security "czar", who had the responsibility to develop and implement the plan, was once a senior advisor within the White House. At present, this position has been relocated to the Department of Homeland Security (DHS), four levels below the Secretary of DHS. The position is currently vacant.

The DHS National Cyber Security Division is funded at less than $80 million, less than three tenths of one percent of DHS's $30 billion budget. An Inspector General report on the division released this summer found that it was understaffed, had been re-organized three times in a four-month period, and had poor communications with the public and private sectors operating the U.S. cyber infrastructure. The division got its first director about a year after DHS was established, and the first incumbent left after one year. He was the third person with the chief responsibility for cyber security to have left during this Administration (the first two had held positions in the White House) and all three have reportedly left in frustration at their inability to get support or high-level attention in the Bush Administration.

In addition to disarray in implementing cyber-security measures to address current, known deficiencies, the Administration has been remiss in support of the research and development efforts needed to ensure that the cyber infrastructure is secure against future threats. Since information technology is a rapidly evolving technology, longer-range research is need to produce constant innovations to address these future threats. Through congressional initiative, the bipartisan Cyber Security Research and Development Act was enacted in 2002 to establish programs at both the National Science Foundation and the National Institute of Standards and Technology to create a critical mass of researchers in universities and industry working on cyber-security solutions for the future and to train the information security professionals needed by industry and government to secure their information infrastructures.

The Administration has not sought the resources to allow the programs to be implemented fully. NSF has made some progress, but has received only about half of the authorized funding for its cyber-security research and education programs. The situation at NIST is much worse. Its information technology budget was actually cut for FY 2004, which has prevented initiation of any of the programs authorized in the 2002 Act.

DEMOCRATS SAY...

Democrats believe that cyber-security deserves a higher priority than it is currently getting. This is a real threat to our safety, our security and our citizens' privacy, and a threat that can develop from a great distance – through anonymous global communications channels – making it difficult either to identify culprits or to anticipate the source and style of attack. We would:

- Give authority and responsibility to an individual with enough prominence within DHS to get the job done – at least an assistant secretary.

- Fund cyber-security activities at a level consistent with the urgency and importance of the task.

- Fund cyber-security R&D and education at the substantially higher levels called for in the Cyber Security Research and Development Act.

7. Protecting the Right to Vote: Standards for Voting Technologies

BUSH ADMINISTRATION GRADE: F

No act of democratic participation is more sacred than the right to cast a vote. Two years after the 2000 Presidential election debacle – in which thousands of voters found themselves arbitrarily disenfranchised by bad ballot designs, unreliable voting technology, and questionable voter identification practices – Congress enacted the Help America Vote Act (HAVA). One important element of HAVA was providing the National Institute of Standards and Technology (NIST) with a key role in helping push for nationwide improvements in voting systems. Under HAVA, NIST chairs the committee to recommend voluntary standards and guidelines related to voting equipment.

It took the Bush Administration eighteen months after passage of HAVA, until the spring of 2004, to even begin implementation. This was far too late to improve the quality of voting equipment to be used in the 2004 election. Many of the well-publicized problems with electronic voting equipment during the past three years could have been alleviated if there were a comprehensive set of standards and conformance testing in place. Yet the Administration has never requested funding for NIST to initiate this important work. Having been the prime beneficiary from the problems with voting technology in 2000, perhaps the Administration was less than enthusiastic about taking steps to improve that technology before the next election.

As we head into another likely close Presidential election, scrutiny of our election systems will be at an all-time high. If there are more problems with voting equipment, public confidence in our voting process may be shattered. This would not have been a problem if the Administration had expeditiously implemented HAVA and requested the funds for NIST to develop voluntary standards.

DEMOCRATS SAY....

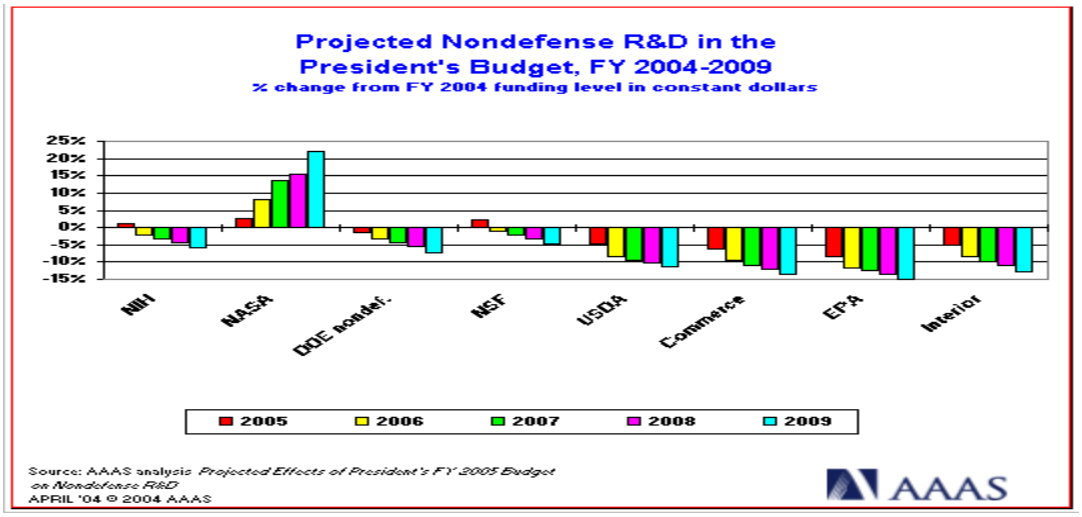
We must expeditiously implement HAVA. Local government officials by and large would welcome guidance on the reliability of various technologies. More importantly, the greatest democracy in the world cannot afford to hold elections in which there is widespread disenfranchisement due to failure or manipulation of technology. We would push to see NIST's efforts fully funded so that the HAVA Committee could expeditiously complete its responsibility of providing voluntary standards and guidelines.

8. The Future of American Science and Technology

BUSH ADMINISTRATION GRADE: D

The Bush Administration is failing our children by cutting investment in America's future science and technology leadership. In an increasingly competitive global market, it is essential that the Administration and Congress do everything in our power to maintain America's role as the leader in the creation of innovative products and new technologies. Investments in biology and the physical sciences are the fuel that generated America's present strength, prosperity and global preeminence, and continued investments are essential for maintaining that edge.

The Bush Administration's plans for 2005 through 2009 are going to starve the very engines that drive innovation in our economy. As the American Association for the Advancement of Science chart below shows, under the Bush Administration's plan, non-defense R&D funding in all agencies except NASA would decline steadily over the next five years.



Overall, nine of the twelve largest R&D funding agencies would see their budgets fall in real terms in the Bush FY05-FY09 budget proposal. Only the Department of Defense (DOD), the Department of Homeland Security (DHS), and the National Aeronautics and Space Administration (NASA) would grow faster than the projected rate of inflation.

Because budget decisions are made annually, these projections delineating the President's five-year R&D plan are not inevitable. However, a crystal ball is not needed to envision how four more years of the Bush Administration will affect our country's R&D portfolio; we only need to examine the past few years. In fiscal year 2005, the Administration's budget submission

for R&D (excluding weapons development) was the most anemic R&D budget submitted to the Congress by any President in the past 20 years. This fact did not escape members of the President's own party. For two years running, Sherwood Boehlert, the Republican Chairman of the House Science Committee, has called the President's budget for R&D "disappointing" and on February 2, 2004, he said:

> *"The budget chapter on R&D [in the FY 2005 budget] includes the quotation that 'Science is a horse. Don't worship it. Feed it.' The budget does not reflect that advice. After a few years of spending at the levels proposed in this budget, science would be an emaciated, old, grey mare, unable to produce any new ideas or young scientists."*

DEMOCRATS SAY...

Science Committee Democrats advocated a 5% increase for FY2005 in civilian R&D spending, have long advocated a doubling of the National Science Foundation budget, and consistently stress the need for investment in both the physical and health sciences. Despite the terrible burden that comes with the Bush deficit, we must continue to make investments in our economy and our people. This is an inescapable obligation if we are to get America out of the hole dug by the present Administration’s fiscal choices.